CHAPTER I

INTRODUCTION

1.1. Background

The most important factor in driving safety is a need for an effective brake. Brake that the namely can be operated to slow or stop the vehicle with the shortest possible braking distances on each type of road surface and various conditions of travel with a short period of time without reducing the braking stability of the vehicle.

Brake is a device on a car that serves to reduce or stop the speed of the car. Brakes are a vital safety equipment, because it brakes must have a perfect construction, it can work well, to ensure the security and durability that can have reliability. In addition, the brake can also be checked and adjusted with relative ease.

Brake equipment installed at the wheel of a car. The principle is to change the brakes or braking kinetic energy (motion) into heat energy by having a friction surface made of two objects.

Types of brakes in general can be classified according to shape and construction according to the mechanism of movement. According to its form of construction, among others, have disc brakes and drum brakes. Meanwhile, according to the mechanism of

movement among other things, the mechanical brake, hydraulic brakes, air brakes, and others.

In a car usually contain of two kinds of brake systems, that are hydraulic systems and mechanical systems. Hydraulic system mounted on all wheels and used as the main brake, which at the time the car is in running condition. Mechanical brake system is only mounted on the rear wheels and in use at the time the car is stopping or parking situation.

In the passenger car brake type commonly in use for the front wheel is a type of brake disc and to the rear wheels in use type of drum brakes. There is a tendency for the cars now make use of the brake discs on all wheels, especially in the sedan class.

New vehicles have standard brake equipment that has a good performance. But if it is not followed by proper and regular maintenance, brake performance will deteriorate. This will be felt once during braking demand is expected, such as :

- Braking time is too slow, where the vehicle can not stop quickly.
- Inequality braking force at each wheel so that the resulting decrease vehicle stability.

Because of the importance of this problem will brake, then periodically Office of Traffic and Transportation (DLLAJ) conduct inspections and due diligence, including the test for vehicle braking.

Through this research, the authors wanted to analyze the influence of the speed of the vehicle speed which causes the maximum braking force.

1.2. Problem Statement

The problem statement can be drawn from the above problem is how the vehicle when driving on different speeds but with the same stopping distance and the effect of maximum braking force on the front axle and rear axle.

1.3. Objective

The purpose of this study is to investigate the maximum braking Force of the front brake and rear brake on Toyota Avanza G 1.3 M/T with vehicle speed of 50 km/h, 55 km/h, 60 km/h, 80 km/h 100 km/h.

1.4. Problem Limitation

Vehicles that will be studied is the type of passenger car is Toyota Avanza 1.3 G M / T Analysis of the dynamics of braking at the limit of braking conditions as follows:

- Vehicle with speed 100 km/h and stopping distance 50 meter.
- Vehicle with speed 80 km/h and stopping distance 50 meter.
- Vehicle with speed 60 km/h and stopping distance 50 meter.
- Vehicle with speed 55 km/h and stopping distance 50 meter.
- Vehicle with speed 50 km/h and stopping distance 50 meter.